

Abstract of the Invention

A method and apparatus for supporting a rotor in a free state with respect to a stator with superconducting bearings. The apparatus has a rotor with closed rotor loops mounted on the rotor shaft and which are formed of a material having zero  
5 electrical resistance at a temperature below a superconductivity transition temperature. A stator encloses the rotor and has closed stator loops formed of the zero electrical resistance material and angularly positioned on the stator about the closed rotor loops. The closed rotor and stator loops are cooled to a temperature below the superconductivity transition temperature of the loop material and energized  
10 to create a magnetic flux between the ones of the closed rotor and stator loops. Apparatus for centering and securing the rotor within the stator is released to enable the rotor to move in the free state with respect to the stator.